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| EXAMINER | |
|---|---|
| MAKI, STEVEN D | |
| **ART UNIT** | **PAPER NUMBER** |
| 1733 | |

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/071,135 | MERINO-LOPEZ ET AL. | |
| | Examiner | Art Unit | |
| | Steven D. Maki | 1733 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *24 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-21 and 30-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21 and 30-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1) The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2) Claim 1-21 and 30-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 31, it is unclear how many first tread elements are being claimed. The first two lines of claims 1, 31 recite "at least one first tread element" whereas the last lines of claim 1, 31 recite "one of the ... first tread elements".

3) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Brazil

5) **Claims 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brazil (Brazil 200002924) in view of Japan 802 (JP 62-6802), Eudy (US 2152883), Japan 321 (JP 6-171321), Japan 807 (JP 61-263807) or Japan 918 (JP 8-118918).**

Although Brazil is not available as prior art against claims 1-6, 18-21 and 30-32 (these claims are entitled to the benefit of the parent application 09/636566 filing date (8-10-00) which is before the publication date (10-17-00) of Brazil), Brazil is available as prior art under 35 USC 102(b) against claims 7-17. With respect to Brazil being published 10-17-00, this application is a CIP of the parent application. Claims 7-17 are not entitled to the benefit of the filing date (8-10-00) of the parent application 09/636,566 since each of claims 7-17 are not directed solely to the subject matter disclosed in the parent application. The subject matter of claims 7-17 was first introduced in this CIP application. Accordingly, the filing date of claims 7-17 is 2-6-02 (the filing date of this CIP application), which is more than one year after the publication date (10-17-00) of Brazil.

Brazil discloses a tire having a sacrificed rib / pad (first tread element) 1 and an ordinary rib / pad (second tread element) 2 wherein the sacrificed rib (first tread element) slides against the ground while the ordinary rib (second tread element) does not slide against the ground. As can be seen from figure 1, the upper surface of the first tread element is below the tread surface. The first tread element includes a sensor for measuring stresses in the longitudinal direction. See abstract of Brazil provided by examiner with the action dated 5-21-04 and the copy and English translation of Brazil provided by applicant with the response filed 10-19-04. Hence, Brazil teaches a first element which slides and a second tread element which does not slide as required by claim 7 due to its dependence on claim 1. Brazil does not recite providing the first tread element as a central zone surrounded by an encircling zone.

Japan 802, Eudy, Japan 321, Japan 807 and Japan 918 are applied in the alternative since (1) Japan 802, Eudy and Japan '321 differentiate the central and encircling zones using an annular cutout (similar to *applicant's figure 6 embodiment*), (2) Japan 807 differentiates the central and encircling zones using composition (similar to *applicant's figure 5 embodiment*) and (3) Japan 918 differentiates the central and encircling zones using wells (similar to *applicant's figure 4 embodiment*).

As to claims 7, 10 and 11, it would have been obvious to one of ordinary skill in the art to form an encircling zone and central zone as claimed wherein the central zone has Brazil's sensor therein in view of (1) Brazil's teaching that the tire should grip the road, (2) Brazil's teaching to embed the sensor in a tread element and (3) Japan 802, Eudy, Japan '321, Japan 807 or Japan '918's teaching to form a tread element in a tread such that it has an encircling zone and central zone wherein

(A) Japan 802 teaches using low height small zones (central zones) partitioned by annular sipes to improve traction (grip),

(B) Eudy teaches using annular slits, which define a central zone, to improve traction (grip),

(C) Japan 321 teaches using sipes, which define central zones, to improve traction (grip),

(D) Japan 807 teaches using different compositions, which define central zones for blocks of a tire, which has sufficient grip to be used on snow and ice,

(E) Japan 918 teaches using holes, which define central zones, to prevent uneven wear without worsening traction (grip).

With respect to Japan 802, it noted that one of ordinary skill in the art would have been particularly motivated to locate Brazil's' the sensor in small zone (central zone) suggested by Japan 802 since (1) Brazil suggests locating the sensor in a low height tread element and (2) Japan 802's small zone is a low height tread element.

As to claim 8, the claimed relative sizes of the zones would have been obvious in view of the relative sizes of the central and encircling zones suggested by Eudy or Japan 321; the zones having about the same area in the diamond shaped blocks in figure 8 of Eudy and Japan 321 teaching to provide the small zone with an area of 5-65% of the block areas.

As to claim 9, the claimed relative sizes of the zones would have been obvious in view of the relative sizes of the central and encircling zones suggested by Eudy, Japan 321 or Japan 918.

As to claims 12, 16 and 17 (thin recess strip / annular cutout), the claimed thin recess strip (annular cutout) would have been obvious in view of the annular cutout suggested by Japan 802, Eudy or Japan 321. With respect to claim 17, it would have been an obvious alternative to incline the annular cut since it is taken as well known / conventional per se to orient an annular slit such that the walls are inclined instead of perpendicular to the tread surface.

As to claims 13 and 14 (wells), note the wells suggested by Japan 918. With respect to claim 14, it would have been an obvious alternative to incline the wells since it is taken as well known / conventional per se to orient wells (holes) such that they are at 90 degrees or inclined with respect to the tread surface.

As to claim 15, Japan 807 suggests using different compositions wherein the central zone has a lower hardness.

Winner et al

6) **Claims 1, 6, 18-20 and 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Winner et al (DE 3939917).**

Winner et al discloses a vehicle tire 12 having a tread 11 and a multiplicity of measuring knobs 10, 101-105 (first tread elements) wherein a "sensor" 20 is embedded within the knob (tread element) 10 as shown in figure 2 so that (1) sensor unit 16 can detect those measuring knobs (first tread elements) which slip (slide) during the rolling of the tire and (2) the momentary friction between the tire 12 and road surface (carriageway surface) 14 can be calculated so as to determine the instantaneous adhesion between the tire and road surface. The measuring knobs have different frictional coefficients obtained by adjusting their geometric shape (inclination) so that a number of the measuring knobs slip during rolling of the tire. See abstract and machine translation.

As to claims 1, 6, 18-20 and 30-32, the claimed tire is anticipated by Winner et al's tire. The claimed sensor reads on sensor 20. The claimed first tread element reads on a measuring knob having the sensor therein. The claimed second tread element reads on another one of the measuring knobs or tread material 11. With respect to claims 6, 30 and 32, Winner et al used plural measuring knobs. As to claims 18-20, see figures 1-2.

With respect to Winner et al's "measuring knob" comprising a sensor having the claimed capability, the examiner makes the following comments: A "sensor capable of producing a signal [singular] representative of a level of tangential force [singular] in the contact surface of the at least one tread element during its passage through the contact area" reads on Winner et al's sensor which produces a signal representative of a level of tangential force in the contact surface of the measuring knob (first tread element) - this tangential force being the force causing the measuring knob to slip. The claimed sensor fails to require, for example, the capability of generating signals representing measuring tangential forces in units of $daN/cm^2$. In other words, the claimed sensor fails to require the capability of producing signals wherein each signal is proportional to tangential force.

Furthermore, the description of "an estimate of a tangential force on the vehicle is obtainable based on the signal produced by a single one of the at least one first tread elements [the at least one first tread element]" relates to intended use and fails to require either (1) a process step of estimating a tangential force on the vehicle based on the signal produced by a single one of the at least one first tread element or (2) means for estimating a tangential force on the vehicle based on the signal produced by a single one of the at least one first tread element.

As to claims 6, 30 and 32, the claimed second tread element reads on another one of the measuring knobs. Claims 1, 31 and 32 do not exclude sensors in the second tread elements. See claim 6. Applicant states: "German '917 [Winner et al] discloses a tire having a plurality of measuring knobs to which a defined coefficient of friction is

assigned by virtue of their geometric shape. The measuring knobs are capable of beginning to slide or slip at various different values of adherence on the road". (page 10 of response filed 10-19-04). With respect to claim 1, it is clear from applicant's description of Winner et al that Winner et al has "different" measuring knobs ("different" tread elements) wherein during rolling of the tire one measuring knob (a first tread element ) can slide whereas another measuring knob (a second element) does not slide ("slides insufficiently"). With respect to "at least within a range of rolling conditions [e.g. low speed] to be monitored", one of the measuring knobs (second tread elements) does not side / slides insufficiently as claimed. Alternatively, the claimed second tread element reads on the tread material 11 defined between the cutouts in which measuring knobs 101-105 are located therein.

Breuer et al

7) **Claims 1, 6, 18-21 and 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Breuer et al (DE 3937966).**

Breuer et al discloses a tire having a tread comprising **tread lugs (tread elements)** and **grooves**. See figure 1, figure 4 and first paragraph after the brief description of the figures on page 2 of the machine translation. Breuer et al provides at least one **sensor 4** in a tread lug (tread element) of the tread for detecting variation of local stresses in at least one horizontal direction and the normal direction. With respect to the sensor, Breuer et al discloses using piezoelectric devices; strain gauges; or magnet 12 and Hall generators 14. See page 3 of machine translation. The measured

values are evaluated to determine the maximum coefficient of friction so as to enable determination of limits of stable vehicle operation before reaching them.

Claims 1, 6, 18-21 and 30-32 are anticipated by Breuer et al's tire. As noted above, Breuer et al teaches a tire having a tread comprising tread lugs. At least under a range of conditions, the tread lug having the sensor 4 inherently slides during its passage through the contact area; it being noted that claim 1 fails to specify composition / structure of the tread element for facilitating sliding. Furthermore, another one of Breuer et al's lugs (whether or not it also contains a sensor) inherently does not slide or slides insufficiently to allow measurement of tangential force. Claims 1, 31 and 32, fail to require the first element to slide under a first rolling condition within "a range of rolling conditions" and the second element to not slide *under the same first rolling condition* (instead of another rolling condition within "a range of rolling conditions").

The description of "an estimate of a tangential force on the vehicle is obtainable based on the signal produced by a single one of the at least one first tread elements [the at least one first tread element]" relates to intended use and fails to require either (1) a process step of estimating a tangential force on the vehicle based on the signal produced by a single one of the at least one first tread element or (2) means for estimating a tangential force on the vehicle based on the signal produced by a single one of the at least one first tread element. For example, claim 1 fails to require providing the claimed tire with means for estimating a tangential force on the vehicle based on the signal produced by a single one of the at least one first tread element instead of evaluation mechanism 10 shown in figure 1 of Breuer et al.

8) **Claims 1-6, 18-21 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Breuer et al view of at least one of Knill (US 4319620) and Kukimoto et al (US 5445201).**

Breuer et al is considered to anticipate claims 1, 31 and 32. In any event: it would have been obvious to one of ordinary skill in the art to embed Breuer et al's sensor in a first tread element which is "different" than a second tread element as claimed in that the first element slides and the second element does not slide or slides insufficiently in view of (1) Breuer et al's suggestion to locate at least one sensor in a tread such that it is embedded in a tread element (e.g. tread lug) and (2) (a) Knill's suggestion to reduce rolling resistance while also providing adequate tread wear and traction (wet skid resistance) by using different compositions for the tread elements of the central portion and outer portions of the tread (some but not all of these tread elements sliding at least within a range of rolling conditions due to their different compositions) and/or (b) Kukimoto et al's suggestion improve wear resistance by using different tread elements in a tread (some but not all of these tread elements sliding at least within a range of rolling conditions due to their different heights).

With respect to Knill and slipping / not slipping, Knill's tread has a "first tread element" which slips "at least within a range of rolling conditions" (emphasis added) and a "second tread element" which does not slip / slips insufficiently "at least within a range of rolling conditions" (emphasis added) because Knill's tread comprises tread elements having different compositions.

With respect to Kukimoto and slipping / not slipping, Kukimoto et al's tread has a "first tread element" which slips "at least within a range of rolling conditions" (emphasis added) and a "second tread element" which does not slip / slips insufficiently "at least within a range of rolling conditions" (emphasis added) because Kukimoto et al's tread has different height tread elements; it being emphasized that Kukimoto teaches that the low height tread element "slides" in the ground contact area so that it function as a sacrificial portion and thereby improve wear resistance of he tread.

As to claims 2-4, Knill suggests the claimed different materials and Breuer et al suggests embedding a sensor in tread element of the central tread region or the outer tread region to determine frictional connection characteristics.

As to claim 5, Kukimoto et al teaches a low height tread element.

As to claims 6, 30 and 32, it would have been obvious to provide sensors in first and second tread elements in view of (1) Knill / Kukimoto et al's disclosure of a tread having "different" tread elements and (2) Breuer et al' suggestion to use plural sensors in a tread.

As to claims 18-21, Breuer et al teaches embedding a sensor 4 in a tread lug (tread element) of the tread for detecting variation of local stresses in at least one horizontal direction and the normal direction wherein with respect to the sensor, a magnet 12 and Hall generators 14 may be used.

Remarks

9) Applicant's arguments filed 1-24-06 have been fully considered but they are not persuasive.

With respect to **Brazil**, applicant concedes that "... it is axiomatic that a tire should grip the road ..." (page 15 of response filed 1-24-06). However, applicant argues that there is no motivation to combine Brazil with any of the secondary references. Examiner disagrees since (1) Brazil teaches that the tire tread must have sufficient grip to avoid an accident in the case of insufficient grip (page 13 of translation) and (2) each of the secondary references teach tread elements for improving the grip of the tread of a tire as desired by Brazil. Motivated by the desire found in Brazil to use a tire tread having sufficient grip, one of ordinary skill in the art would have found it obvious to use tread elements disclosed by the secondary art for Brazil's tread to improve the grip of the tread as desired by Brazil.

Applicant argues that Brazil teaches positioning the sensor in a sacrificed rib instead of a general teaching to embed the sensor in a tread element. Contrary to applicant's argument, Brazil is not limited to embedding the sensor in a "sacrificed rib". For example, Brazil teaches that the sensor may be embedded in a sacrificed pad. See first line of next to last paragraph on page 5 of the translation. Another example, Brazil teaches a first tread element having a sensor therein wherein this first tread element slides relative to the ground. See last paragraph on page 3 of the translation. This disclosure of a first tread element which slides relative to the ground is not limited to "sacrificed rib". Another example, Brazil teaches using a first element having a low height (a tread element having a smaller distance from wheel axle to the contact surface). See paragraph (a) on page 4 of translation.

With respect to applicant's argument that Brazil fails to provide a general teaching to embed the sensor in a tread element, the examiner emphasizes that Brazil's invention is to provide a tire having a tread with sufficient grip with a sensor such that the sensor is within a tread element that slides so that a signal representative of tangential force can be produced and used for example to estimate the tire's grip potential. This first tread element may be a pad. Tread portion 11 in Japan 802 is a "pad". This first tread element may have a low height. Tread portion / pad 11 in Japan 802 has a low height. In particular, the distance between the wheel axle and the contact surface 11A of tread portion / pad 11 is smaller than the distance from the wheel axle and the contact surface 3A.

With respect to Brazil, applicant argues that the idea that the central zone is particularly suitable for making grip measurements because it offers less resistance to forces perpendicular to the surface of the tread than the encircling zone is not recognized by the prior art. This argument is not commensurate in scope with claim 7 and is therefore not persuasive since claim 7 fails to require the central zone to offer less resistance to forces perpendicular to the surface of the tread than the encircling zone. Claim 7 reads on the central zone having increased resistance to perpendicular forces. In any event, note for example that Brazil teaches locating the sensor in a low height tread element and that tread portion / pad 11 in Japan 802 has a low height.

With respect to **Winner et al**, applicant argues and the examiner agrees that the sensor in Winner detects whether the corresponding knob is or is not slipping. The

examiner adds that the claimed sensor reads on a sensor which merely detects whether the first tread element is or is not slipping.

With respect to Winner, applicant argues that the feature in the last four lines of clam 1 is not taught by Weiner. In response, the examiner comments that description of "an estimate of a tangential force on the vehicle is obtainable based on the signal produced by a single one of the at least one first tread elements [the at least one first tread element]" relates to intended use and fails to require either (1) a process step of estimating a tangential force on the vehicle based on the signal produced by a single one of the at least one first tread element or (2) means for estimating a tangential force on the vehicle based on the signal produced by a single one of the at least one first tread element.

With respect to **Breuer et al**, applicant argues that claim 1 requires the first and second tread elements to be considered under the same set or rolling conditions. In response, the examiner notes that claim 1 fails to require the first element to slide under a first rolling condition within "a range of rolling conditions" and the second element to not slide *under the same first rolling condition* (instead of another rolling condition within "a range of rolling conditions").

With respect to Breuer, applicant argues that Breuer does not teach the feature described in the last four lines of claim 1. In response, the examiner notes that the description of "an estimate of a tangential force on the vehicle is obtainable based on the signal produced by a single one of the at least one first tread elements [the at least one first tread element]" relates to intended use and fails to require either (1) a process

step of estimating a tangential force on the vehicle based on the signal produced by a single one of the at least one first tread element or (2) means for estimating a tangential force on the vehicle based on the signal produced by a single one of the at least one first tread element. For example, claim 1 fails to require providing the claimed tire with means for estimating a tangential force on the vehicle based on the signal produced by a single one of the at least one first tread element instead of evaluation mechanism 10 shown in figure 1 of Breuer et al.

With respect to applicant's arguments regarding Knill and Kukimoto et al, note that (1) tread elements comprising different compositions (e.g. different wet skid resistances) must slip at different rolling conditions and (2) Kukimoto et al teaches that the wear sacrificed portion (in contrast to the land portions) slide contacts within the ground contacting area.

10) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven D. Maki
April 2, 2006

Steven D. Maki
STEVEN D. MAKI 4-2-06
PRIMARY EXAMINER